

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-155343

(43)Date of publication of application : 20.06.1995

(51)Int.Cl.

A61F 2/60

A61F 2/54

(21)Application number : 05-303937

(71)Applicant : NARA GISHI:KK

(22)Date of filing : 03.12.1993

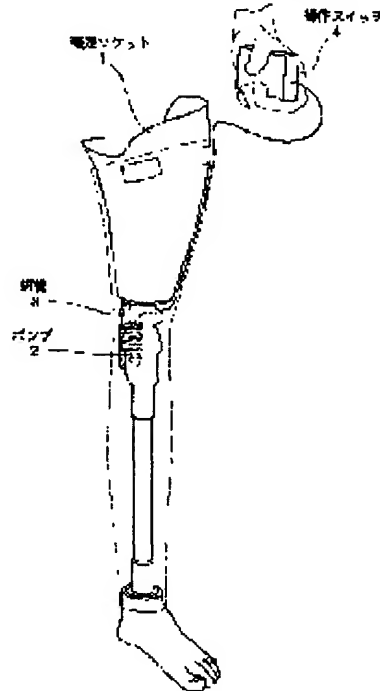
(72)Inventor : TAKITANI NOBORU

## (54) MOUNTING STRUCTURE OF ARTIFICIAL FOOT OR ARTIFICIAL HAND

### (57)Abstract:

**PURPOSE:** To permit attachment and detachment of an artificial foot or artificial hand with an extremely simple operation by connecting a pump for suction and pressurization to an artificial thigh socket or artificial arm socket.

**CONSTITUTION:** The artificial thigh socket 1 and the pump 2 for suction and pressurization are connected by a short pipe 3. This pump 2 is turned on and off and is adjusted in a suction pressure and pressurizing force by operation of an operating switch 4. A cut leg is tightly fitted and fixed into the socket 1 without applying cloth, etc., and antislip accelerator used heretofore thereon by setting the pump 2 at on and to the suction side and inserting the cut leg into the socket 1 while discharging the air in the socket. The cut leg is removed by setting the pump 2 on the pressurizing side and sending the air into the socket 1 when the removal of the socket 1 is necessary at the time of using a toilet or other times.



## LEGAL STATUS

[Date of request for examination] 03.12.1993

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2120155

[Date of registration] 20.12.1996

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against  
examiner's decision of rejection]

[Date of extinction of right]

06.03.2000

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**CLAIMS**

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[Claim(s)]

[Claim 1] Wearing structure of the artificial leg or upper extremity prosthesis characterized by connecting an artificial leg socket or an upper-extremity-prosthesis socket, suction, and a pressurization combination pump.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the wearing structure of an artificial leg or an upper extremity prosthesis.

[0002]

[Description of the Prior Art] The following are known as the conventional artificial leg or wearing structure of an upper extremity prosthesis.

(1) it is shown in drawing 2 -- as -- the push-in type socket 11 -- cutting -- the thing of structure which hangs by the belts 13 (for example, \*\*\*\*\*, a pelvic band, etc.) which inserted the leg 12 and were hung from other parts. (It is hereafter called a "push-in type")

(2) The thing of the structure which equips a socket 14 with the adsorption bulb 15, and has the self-suspension force as shown in drawing 3 . (It is hereafter called a "adsorption equation")

however -- although a push-in type is easy to equip -- as an incidental member -- a belt -- needing -- moreover, a socket 11 and cutting -- the adhesion between legs 12 may not necessarily be enough, and sense of incongruity may arise to a wearing person

[0003] This point and an adsorption equation do not need an incidental member like a belt, but are used. [ present most ] Then, it is as follows when the procedure of the wearing approach of an adsorption equation is explained briefly.

[0004] \*\* the ingredient which makes lubricity of talc etc. good -- socket 14 inner skin and cutting -- a leg -- apply to an edge and improve slipping.

\*\* next, cutting -- a leg -- an edge -- cloth like a Japanese wrapping cloth -- covering -- the cutting -- a leg is inserted into a socket 14 and it sticks to socket inner skin -- making -- opening of the attachment part of the adsorption bulb 15 -- cutting -- a leg -- pull out the cloth twisted around the edge.

\*\* Bind the adsorption bulb 15 tight and change the inside of a socket into a negative pressure condition a little. This adsorption bulb 15 is because it has the nonreturn function in which only the circulation of air which goes outside from the inside of a socket 14 is possible.

[0005] drawing 4 (a) and (b) -- the principle of an adsorption equation -- a piston-cylinder style -- dummy treatment \*\*\*\* -- it is drawing which expressed typically briefly. a piston 16 -- cutting -- it is equivalent to a leg and a cylinder 17 is equivalent to a socket.

[0006] Thus, in order to require time and effort very much since an adsorption equation is the approach of equipping through many phases, and to equip just, a certain amount of skill is needed. That is, an adsorption equation has the following faults.

(a) It takes the time and effort of applying lubricant.

(b) cutting -- a leg -- if the cloth twisted around the edge is pushed against a socket pars basilaris ossis occipitalis too much -- cloth -- taking out -- hard -- a Ruth inner skin [ the / cloth and socket inner skin ] on the other hand condition -- the time of the walk after wearing -- cutting -- it becomes easy to escape from a leg.

(c) \*\*\*\* makes complicated wearing which may have to detach and attach an adsorption socket due to an include angle in the knees, and was described above to whenever [ the ] like [ in the case of using a Japanese style toilet ] there be nothing. Moreover, it becomes easy to escape from an adsorption socket, in sweating or sitting cross-legged and sitting on a tatami.

[0007] Thus, in everyday life, unless there is a situation from which a socket tends to escape plentifully and it pulls out a socket, it may not be able to do. Then, although the method of re-equipping with a socket easily is required, this request cannot be met in the present adsorption equation. since [ furthermore, ] the thing of an adsorption equation is the approach of carrying out self-suspension using the adsorption bulb which has a nonreturn function primarily -- under a walk -- setting -- gradually -- cutting -- the adhesion of a leg and socket inner skin falls -- the self-suspension force -- being insufficient -- cutting -- it has the fault of becoming easy to escape from a leg.

[0008] This invention is made in view of such a trouble that a Prior art has, and the purpose is in facing equipping, not doing an excessive activity, equipping simply, and offering the wearing structure of adhesion, a fixable artificial leg, or an upper extremity prosthesis.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the summary of this invention is in the wearing structure of the artificial leg or upper extremity prosthesis characterized by connecting an artificial leg socket or an upper-extremity-prosthesis socket, suction, and a pressurization combination pump.

[0010]

[Function] the inside of an artificial leg socket or an upper-extremity-prosthesis socket -- cutting -- while inserting a leg -- a switch of pump suction-side -- carrying out -- the air in a socket -- drawing in -- negative pressure -- carrying out -- cutting -- a leg is stuck and fixed at socket inner skin.

[0011] moreover, cutting -- making the switch of a pump into a pressurization side and sending in air in a socket, when extracting a leg out of a socket -- cutting -- the adhesion of a leg and socket inner skin is fallen -- making -- cutting -- a leg is extracted from a socket.

[0012]

[Example] The example of this invention is explained based on drawing 1 below. In drawing 1, 1 is an artificial leg socket, 2 is suction and a pressurization combination pump, and this pump 2 and artificial leg socket 1 pars basilaris ossis occipitalis is connected with the short pipe 3. By preparing near the pars basilaris ossis occipitalis of a socket 1, a short pipe 3 can make the inside of a socket 1 homogeneity early more at negative pressure. 4 is the actuation switch of a pump 2, it is operating this actuation switch 4, and it is possible to adjust not only turning on and off of a pump 2 but suction pressure and welding pressure.

[0013] while turning ON a pump 2, and turning on a suction side in the starting configuration and discharging the air in a socket 1 outside -- cutting -- the cloth currently conventionally used when inserting the leg -- not needing -- a slipping accelerator -- it is not necessary to apply -- smooth -- cutting -- a leg can be stuck and fixed in a socket 1. moreover, the thing for which a pump 2 is made into a pressurization side and air is sent in in a socket 1 in the time of toilet use etc. when a socket 1 needs to be detached and attached -- prompt -- cutting -- the case where can extract a leg and it equips again -- above -- carrying out -- very easy actuation -- cutting -- a leg can be stuck and fixed in a socket 1. although it is not necessary to operate the actuation switch 4 fundamentally during a walk -- sweat etc. -- a socket 1 and cutting -- since the suction force of a pump 2 can be moderately adjusted by operating the actuation switch 4 when adhesion with a leg falls, a socket 1 does not fall out

[0014] In addition, in the above-mentioned example, although the case where it applied

to an artificial leg as a socket 1 was described, of course, it is applicable also to an upper extremity prosthesis.

[0015]

[Effect of the Invention] Since the wearing structure of the artificial leg or upper extremity prosthesis concerning this invention is constituted as mentioned above, it is not based on a wearing person's age and sex, but the desorption of an artificial leg or an upper extremity prosthesis can do it in very easy actuation. Therefore, in actuation of everyday life, also when an artificial leg or an upper extremity prosthesis needs to be detached and attached, troublesomeness cannot be felt and comfortable everyday life can be passed.

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**TECHNICAL FIELD**

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[Industrial Application] This invention relates to the wearing structure of an artificial leg or an upper extremity prosthesis.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] Since the wearing structure of the artificial leg or upper extremity prosthesis concerning this invention is constituted as mentioned above, it is not based on a wearing person's age and sex, but the description of an artificial leg or an upper extremity prosthesis can do it in very easy actuation. Therefore, in actuation of everyday life, also when an artificial leg or an upper extremity prosthesis needs to be detached and attached, troublesomeness cannot be felt and comfortable everyday life can be passed.

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TECHNICAL PROBLEM

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[Description of the Prior Art] The following are known as the conventional artificial leg or wearing structure of an upper extremity prosthesis.

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(2) The thing of the structure which equips a socket 14 with the adsorption bulb 15, and has the self-suspension force as shown in drawing 3. (It is hereafter called a "adsorption equation")

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**MEANS**

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[Means for Solving the Problem] In order to attain the above-mentioned purpose, the summary of this invention is in the wearing structure of the artificial leg or upper extremity prosthesis characterized by connecting an artificial leg socket or an upper-extremity-prosthesis socket, suction, and a pressurization combination pump.

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**OPERATION**

[Function] the inside of an artificial leg socket or an upper-extremity-prosthesis socket -- cutting -- while inserting a leg -- a switch of pump suction-side -- carrying out -- the air in a socket -- drawing in -- negative pressure -- carrying out -- cutting -- a leg is stuck and fixed at socket inner skin.

[0011] moreover, cutting -- making the switch of a pump into a pressurization side and sending in air in a socket, when extracting a leg out of a socket -- cutting -- the adhesion of a leg and socket inner skin is fallen -- making -- cutting -- a leg is extracted from a socket.

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**EXAMPLE**

[Example] The example of this invention is explained based on drawing 1 below. In drawing 1, 1 is an artificial leg socket, 2 is suction and a pressurization combination pump, and this pump 2 and artificial leg socket 1 pars basilaris ossis occipitalis is connected with the short pipe 3. By preparing near the pars basilaris ossis occipitalis of a socket 1, a short pipe 3 can make the inside of a socket 1 homogeneity early more at negative pressure. 4 is the actuation switch of a pump 2, it is operating this actuation switch 4, and it is possible to adjust not only turning on and off of a pump 2 but suction pressure and welding pressure.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is the front view of the wearing structure of the artificial leg of this invention.

[Drawing 2] It is the front view of the wearing structure of the conventional artificial leg.

[Drawing 3] It is the front view of the wearing structure of another conventional artificial leg.

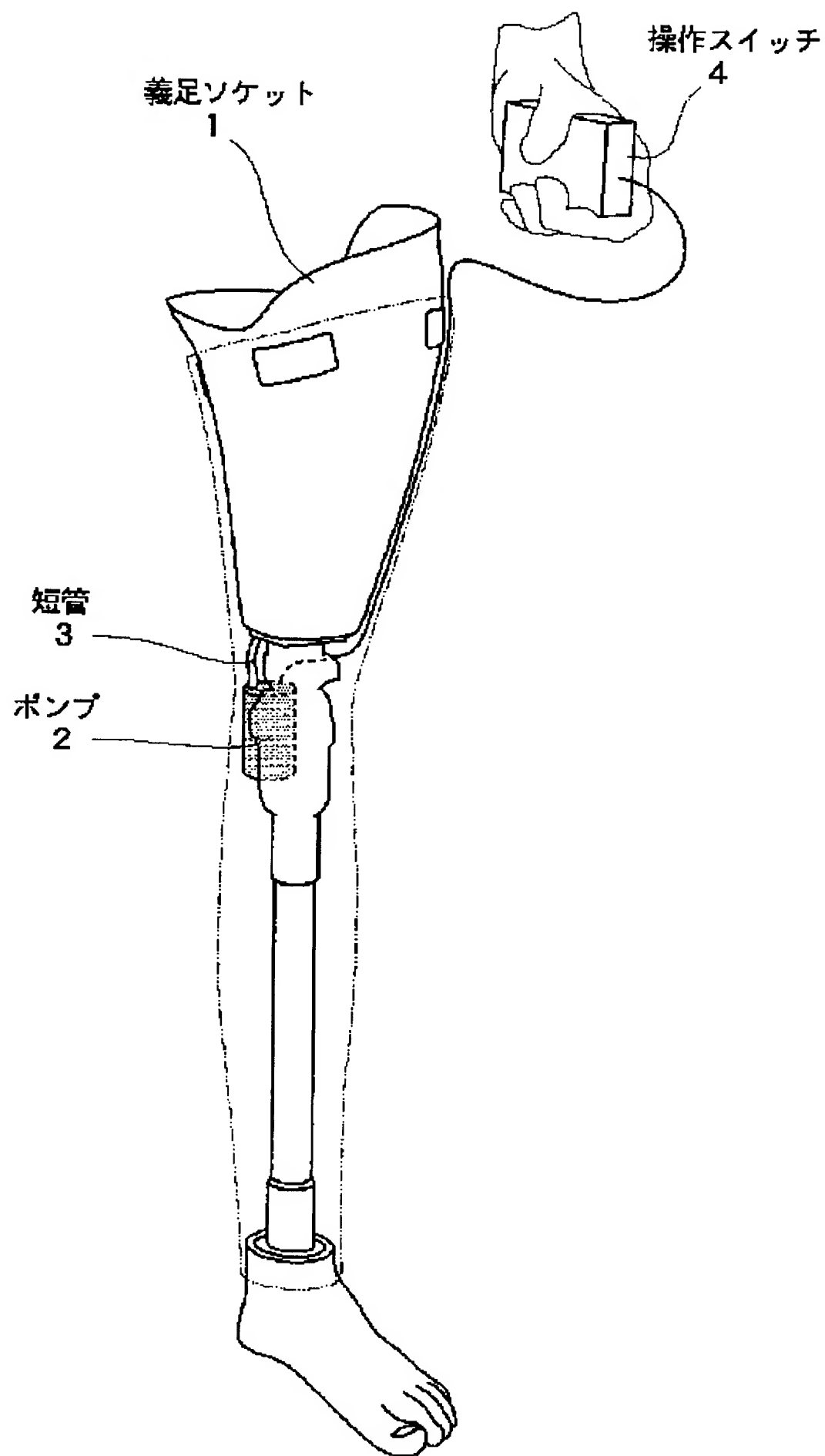
[Drawing 4] (a) and (b) are the mimetic diagrams showing the principle of an adsorption equation.

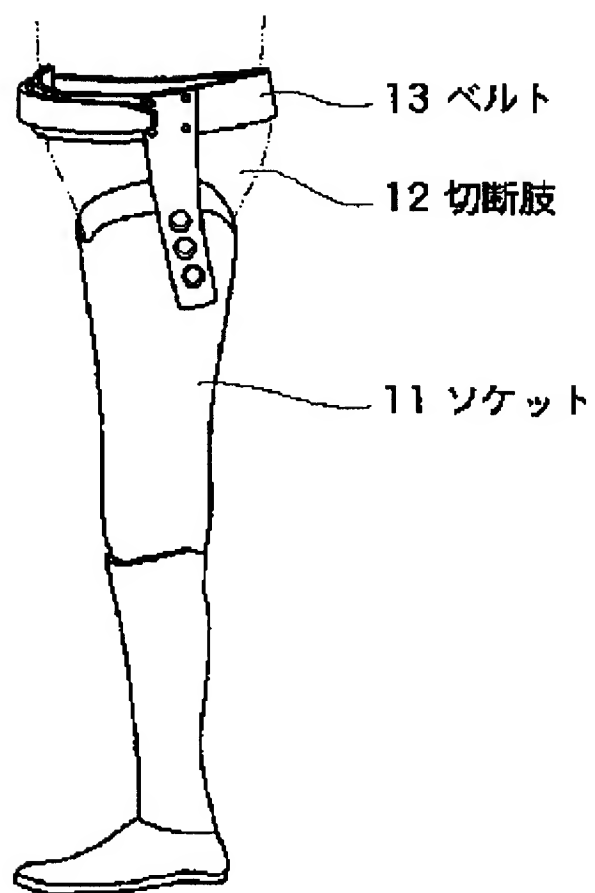
[Description of Notations]

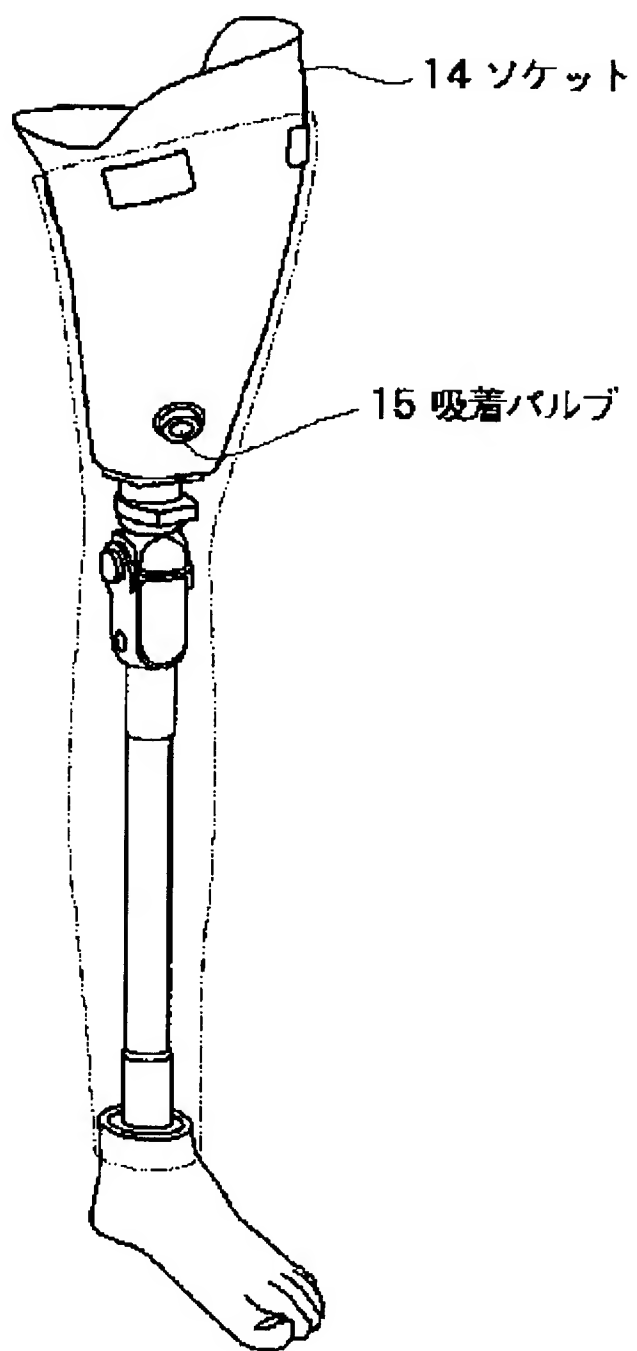
- 1 -- Artificial leg socket
- 2 -- Pump
- 3 -- Short pipe
- 4 -- Actuation switch
- 11 -- Socket
- 12 -- cutting -- a leg
- 13 -- Belt
- 14 -- Socket
- 15 -- Adsorption bulb
- 16 -- Piston
- 17 -- Cylinder

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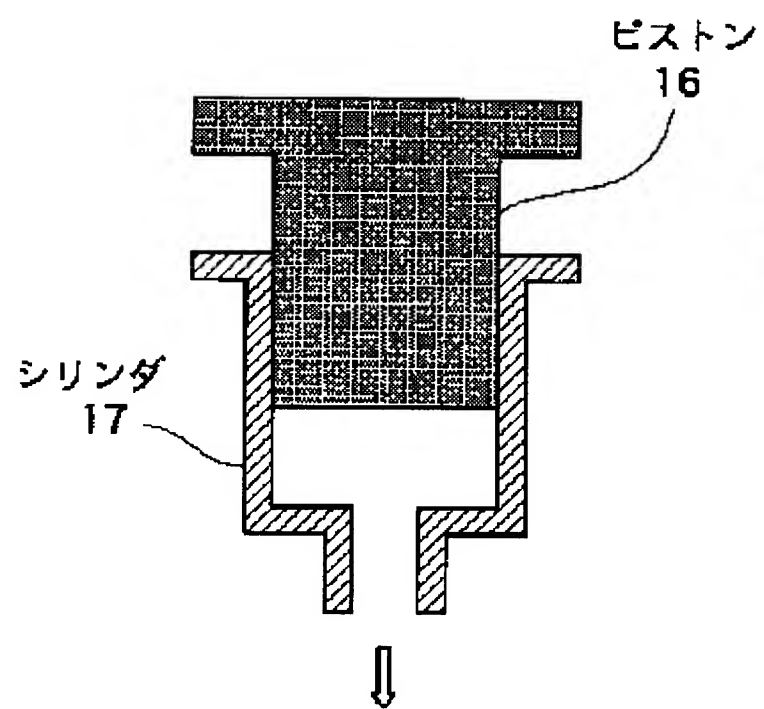
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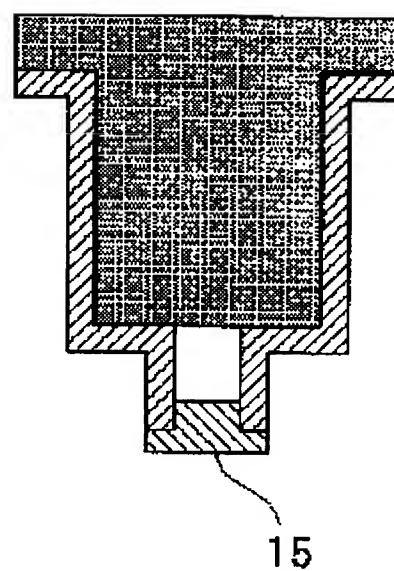








(a)



(b)

JAPANESE

[JP,07-155343,A]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE  
INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE  
DESCRIPTION OF DRAWINGS DRAWINGS

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[Translation done.]